LIST OF PENDING CLAIMS

1.(Currently Amended) A photoresist composition, comprising

a resin binder, and

an encapsulated material comprising inorganic core particles at least partially coated with a moiety having a protected acidic group, said coated particles being distributed within the resin,

wherein the protected acidic group comprises an acid labile group.

2. (Canceled)

3. (Currently Amended) ~~The~~ A photoresist composition ~~of claim 1~~, comprising

a resin binder, and

an encapsulated material comprising inorganic core particles at least partially coated with a moiety having a protected acidic group, said coated particles being distributed within the resin,

wherein the protected acidic group comprises a photo-labile group.

4. (Original) The photoresist of claim 3, wherein the encapsulated material is base soluble upon activation by actinic radiation.

5. (Currently Amended) The photoresist of claim 1 ~~2~~, wherein the acid labile group can be any of acetal, ketal, ester, carbonate, and malonate.

6. (Original) The photoresist of claim 5, wherein the acid labile group can be any of t-butyl ester, t-butyl carbonate, and t-butyl malonate.

7. (Original) The photoresist of claim 3, wherein the photo-labile group can be any of an aliphatic diazoquinone or an aromatic diazoquinone moiety.

8. (Original) The photoresist of claim 7, wherein the photo-labile group comprises diazonaphthoquinone (DNQ).

9. (Currently Amended) The photoresist of claim 1 ~~2~~, further comprising a PAG that generates acid upon activation by actinic radiation to remove said protective acid labile group to render the encapsulated material base soluble.

10. (Currently Amended) The photoresist of claims 1 or 3, wherein said protected acidic group can be any of a protected carboxylic, a protected phenol, or a protected hydroxyl group.

11. (Currently Amended) The photoresist of claims 1 or 3, wherein the core particles are formed of a metal oxide.

12. (Original) The photoresist of claim 11, wherein the metal oxide can be any of SiO_2, Al_2O_3 or TiO_2.

13. (Currently Amended) The photoresist of claims 1 or 3 ~~12~~, wherein the core particles are formed of SiO_2 having silanol containing surfaces.

14. (Original) The photoresist of claim 13, wherein the moiety coating the core particles comprises a hydrocarbon chain attached at one end to the protected acidic group and at another end to the surface silanol.

15. (Currently Amended) The photoresist of claim 13 ~~14~~, wherein the moiety coating the core particles comprises a hydrocarbon chain attached at one end to the protected acidic group and at another end to the surface silanol and wherein the hydrocarbon chain comprises less than about 20 carbon atoms.

16. (Currently Amended) ~~The~~ A photoresist composition ~~of claim~~, comprising

a resin binder, and

an encapsulated material comprising inorganic core particles at least partially coated with a moiety having a protected acidic group, said coated particles being distributed within the resin,

wherein the core particles have an average size less than about 10 nanometers.

17. (Currently Amended) A method of processing a semiconductor substrate, comprising:

coating the substrate surface with a photoresist composition comprising a resin binder, and an encapsulated material comprising inorganic core particles at least partially coated with a moiety having a protected acidic group selected from the group consisting of an acid-labile group and a photo-labile group, said coated particles being dispersed within said resin binder,

exposing selected portions of the coated surface to an activating radiation to cause a chemical transformation in the exposed portions,

removing either the radiation-exposed or unexposed portions of the photoresist composition, and

plasma-etching the substrate surface to generate a pattern thereon.

18. (Currently Amended) A method of processing a semiconductor substrate, comprising:

coating the substrate surface with a photosensitive resist comprising a resin binder, and an encapsulated material comprising inorganic core particles at least partially coated with a moiety having a protected acidic group selected from the group consisting of an acid-labile group and a photo-labile group, said coated particles being dispersed within said resin binder,

exposing selected portions of the coated surface to an activating radiation to cause a chemical transformation in the exposed portions,

removing either the radiation-exposed or unexposed portions of the resist composition, and

exposing the substrate surface to an ion beam to implant a selected dose of the ion in the portions of the substrate from which the photoresist coating is removed.

19. (Currently Amended) A method of processing a semiconductor substrate, comprising:

coating the substrate surface with a multi-layer photoresist composition having at least one layer comprising a resin binder, and an encapsulated material comprising inorganic core particles at least partially coated with a moiety having a protected acidic group selected from the group consisting of an acid-labile group and a photo-labile group, said coated particles being dispersed within said resin binder,

exposing selected portions of the coated surface to an activating radiation to cause a chemical transformation in the exposed portions,

removing either the radiation-exposed or unexposed portions of the photoresist composition, and

plasma-etching the substrate surface to generate a pattern thereon.

20. (Currently Amended) A photoresist composition, comprising

a resin binder, and

an encapsulated material comprising inorganic core particles at least partially coated with a moiety having a protected acidic group selected from the group consisting of an acid-labile group and a photo-labile group,

wherein said moiety is attached to said particles by one or more covalent bonds.

21. (Currently Amended) The photoresist of claims 1 or 3, wherein said particles have an average size ranging from about 1 nm to about 50 nm.

22. (Currently Amended) The photoresist of claims 1 or 3, wherein said particles have an average size ranging from about 1 to about 20 nm.

23. (Previously Presented) A photoresist composition, comprising

a resin binder, and

an encapsulated material comprising inorganic core particles at least partially coated with a moiety having a protected acidic group,

wherein said particles have an average size less than about 10 nm.

24. (Previously Presented) A positive photoresist comprising a resin binder and an encapsulated inorganic material comprising core particles having an average size ranging from about 1 nm to about 50 nm, wherein said particles are base-soluble and the photoresist is sufficiently base soluble upon activation by radiation to function as a positive resist.

25. (Previously Presented) The positive photoresist composition of claim 24, wherein the average size of the particles ranges from about 1 to about 20 nm.

26. (Previously Presented) The positive photoresist composition of claim 25, wherein the average size of the particles is less than about 10 nm.

27. (Currently Amended) A photoresist composition, comprising

a resin binder, and

an encapsulated material comprising inorganic core particles at least partially coated with a moiety having a protected acidic group selected from the group consisting of an acid-labile group and a photo-labile group,

wherein said moiety is adsorbed onto said particles.